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(54) Hose connectors

(57) The present specification discloses a hose connector for connecting a hose to air supply and reception terminals g. tractor/trailer units of an articulated vehicle, the connector comprising a socket (5) having one end region (9) adapted to be attached to the hose and a spigot (7). At least one seal (27, 29) is provided and resilient retaining means eg. a ring (31) engages in radially aligned grooves (23, 43) in the socket (5) and the spigot (7). The spigot (7) has an external threaded region (37) for attachment to a complementarily threaded terminal.

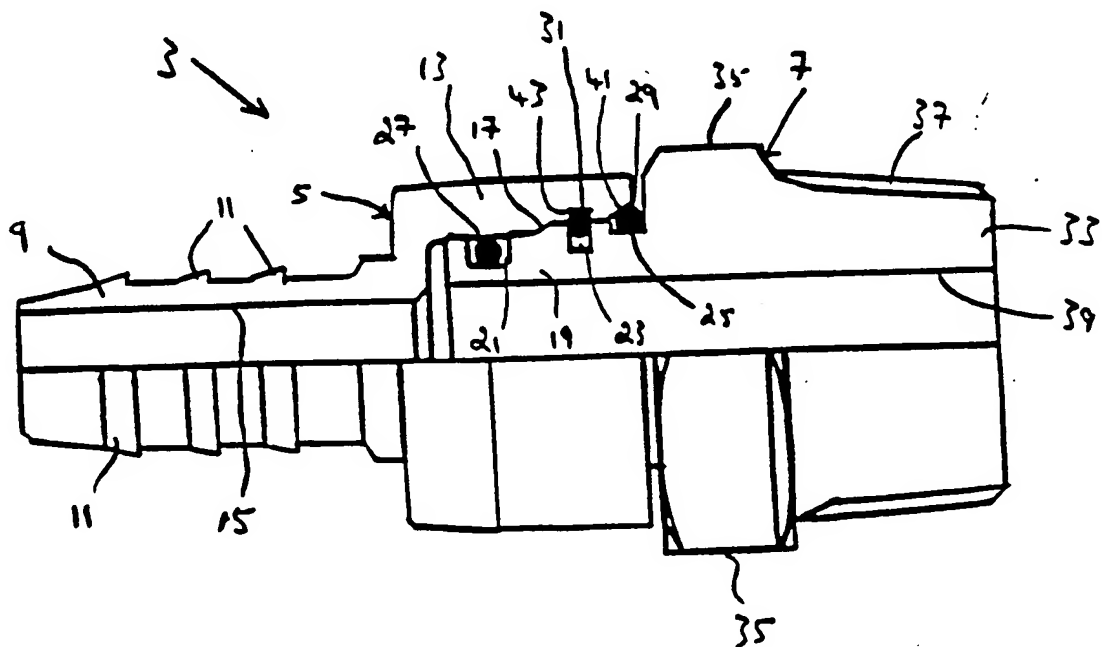


FIG 2

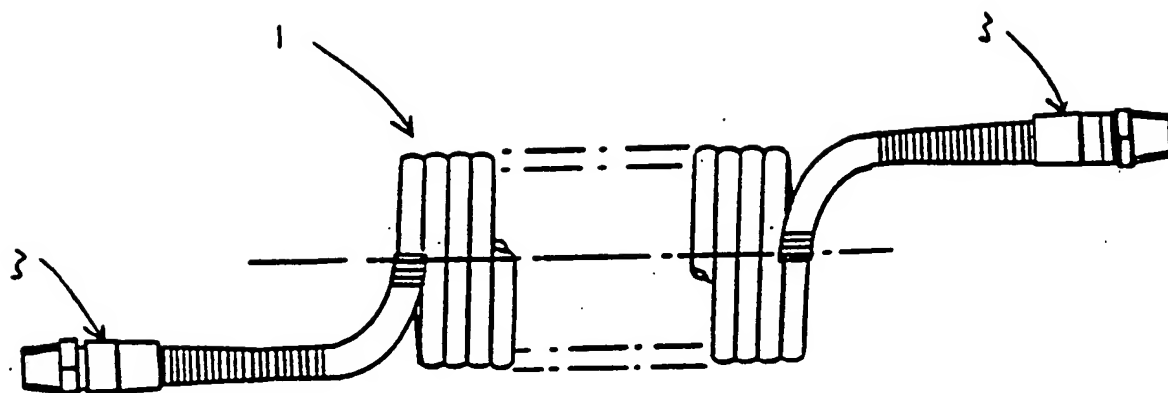


FIG 1

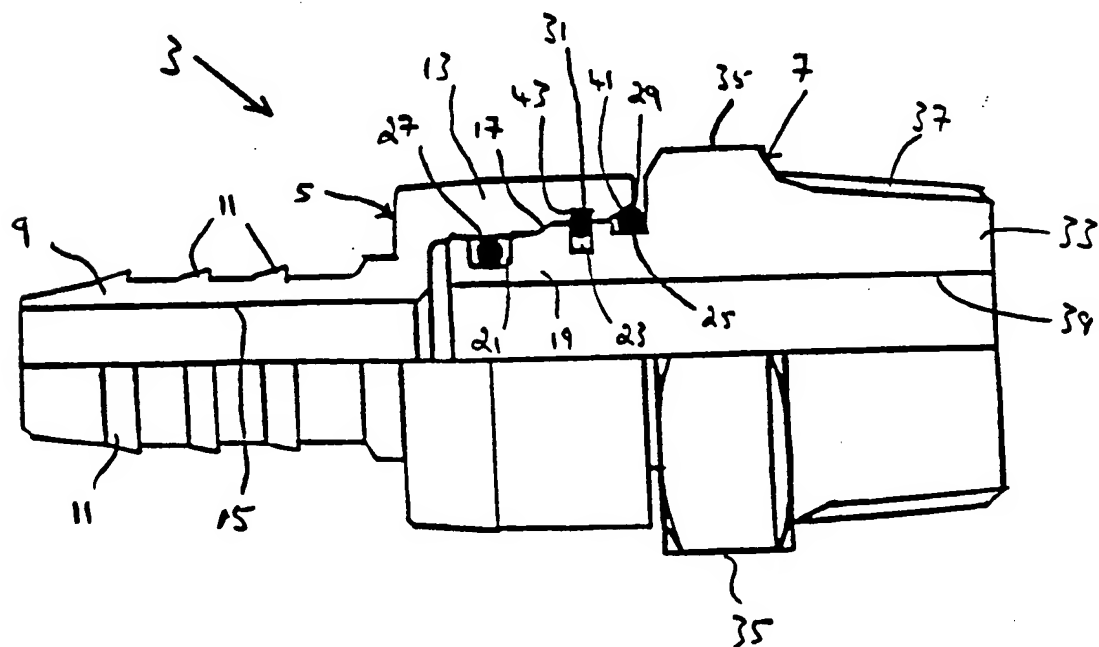


FIG 2

- 1 -

DESCRIPTIONIMPROVEMENTS RELATING TO HOSE CONNECTORS

The present invention relates to a hose connector.

In particular, the present invention relates to a hose connector for use in connecting a flexible air line hose to fixed air supply and reception terminals in a braking system such as on the tractor unit and trailer unit of an articulated vehicle. The hose connector of the present invention may alternatively be equally well applied to any other fluid transfer system.

Flexible air line hoses for vehicle braking systems, for location between a tractor unit and articulated trailer unit, are conventionally formed out of a suitable plastics material which is preset during manufacture, into the form of a coil. This gives the hose a tidy but flexibly resilient configuration. Known hose connectors are frictionally gripped within the end regions of the hose and are screwed onto the appropriate terminals on the tractor unit and trailer unit to form sealed connections. Whilst it is relatively easy to screw one end of a hose onto a terminal, though the whole hose has to be itself rotated and this can prove unwieldly, it is difficult to screw the second connector onto the remaining terminal, the hose having to be first rotated against the direction of the thread and

then screwed onto the remaining terminal. This is clearly a difficult operation to complete and when tightening said second connector it can be that the hose is tensioned, so applying force which tries to unscrew the connectors.

The aim of the present invention is to provide a hose connector which simplifies the attachment of a hose to the respective connectors.

According to the present invention there is provided a hose connector comprising a first member having one end region adapted to be attached to an end region of a hose, a bore extending through said first member and having an enlarged diameter region remote from said one end region of said first member, a second member having a bore extending therethrough, being rotatably located within the enlarged diameter region of the bore in the first member with at least one seal being provided between said first and second members and resilient means engaging in radially aligned grooves in the wall of the bore in the first member and the outer surface of said second member, said bores being coaxially aligned with each other, with the bore in said second member extending through a portion of said second member which has an external threaded region for attachment to complementarily threaded terminal.

Thus, by virtue of the present invention the hose

connector secured to an end of a hose can be engaged with a terminal and by rotation of said second member relative to the first member, the connector can be simply connected to the terminal without having to rotate the hose itself. A greater advantage results when securing the second connector as there are no terminal problems as with the prior art.

In a preferred embodiment of the present invention two sealing rings are provided, each sealing ring being located in an annular groove in the periphery of the second member and projecting radially therefrom for engagement with said first member. The sealing rings are axially located one on each side of the aligned grooves in which said resilient means engage, with one sealing ring engaging the wall of the enlarged region of the bore in said first member to act primarily as an air seal, and the other sealing ring engaging said first member in the region of the mouth of the enlarged diameter region of the bore in the first member to act primarily as a dirt seal. Alternatively additional seals or only the air seal may be provided. Further, said resilient means is preferably an annular spring clip which exerts a radially outwardly directed force and is of sufficient radial extent to engage in both of the aligned grooves in said first and second members.

Preferably, the mouth of the enlarged diameter region of the bore in the first member has a chamfered edge so that by engaging the second member complete with seals and spring clip into said mouth, the air seal and spring clip are compressed by the chamfer and eventually the spring clip engages in the annular groove in the wall of the bore in said first member, to secure said first and second members together. Further, the enlarged diameter region of the bore in the first member is preferably stepped to provide a shoulder against which a complementary shoulder on said second member can engage to facilitate a good sealing connection.

The present invention will now be further described, by way of example, with reference to the accompanying drawings, in which:-

Fig. 1 is a fragmented side view of a hose incorporating connectors according to the present invention; and

Fig. 2 is a partial axial cross-sectional view of a preferred form of connector constructed according to the present invention.

The air line shown in Fig. 1 of the accompanying drawings comprises a hose 1 made of a suitable plastics material and set during manufacture into a generally coiled form to this form a tidy and flexibly resilient air line. Each end of the hose 1 is provided with a

connector 3 constructed according to the present invention, the connectors 3 enabling the air line to be securely and sealingly attached to respective supply and receiving terminals (not shown).

Each connector 3 comprises a first elongate member 5 and a second elongate member 7. The first elongate member 5 comprises a generally cylindrical portion 9 with a number of axially spaced apart ridges 11 formed on its outer surface, and an enlarged diameter portion 13. A bore 15 extends axially through the first member 5 and has an enlarged diameter section within said enlarged diameter portion 13, said enlarged diameter section being stepped to form a shoulder 17.

The second elongate member 7 has one end section 19 which is of complementary shape to the enlarged diameter section of the bore 15. Said one end section 19 has three axially spaced apart annular grooves 21, 23 and 25 formed in its outer periphery. O-ring seals 27 and 29 are located in grooves 21 and 25 respectively and act primarily as an air seal and dirt seal respectively, and resilient means in the form of an annular spring clip 31 are located in the groove 23 between said sealing rings 27, 29. Alternatively only the air seal may be provided or additional seals can be included. The other end section 33 of said second member 7 comprises a

hexagonal portion 35 and a screw threaded portion 37, and a bore 39 extends axially through said second member 7.

Said first and second members 5, 7 are easily assembled together by engaging said one end section 19 of the second member 7 into the enlarged diameter section of the bore 15, the mouth of the enlarged diameter section of bore 15 having a chamfer 41 which facilitates compression of seal 27 and resilient means 31 as the end section 19 is pushed further into bore 15. Eventually an axial position is reached wherein the groove 23 is aligned with an annular groove 43 provided on the wall of the bore 15. The spring clip 31 then expands radially to lie within the aligned grooves 23 and 43, thus holding the first and second members axially together whilst allowing relative rotation therebetween. In this position seal 27 presses against the wall of the bore 15 and acts primarily as an air seal, shoulder 17 is engaged by a complementary shoulder on said end section 19 of the second member 7, and seal 29 engages the chamfer 41 to thus act primarily as a dirt seal.

In use, the generally cylindrical portion 9 of the first member 5 is engaged in an end of the hose 1, the ridges 11 deforming the hose 1 to thus provide a positive attachment to the hose. Then, when required,

the screw threaded portion 37 of the second member 7 is engaged and screwed into a complementarily threaded terminal (not shown), the second member 7 being rotated relative to said first member 5 to facilitate attachment. A spanner can be applied to the hexagonal portion 35 to tighten the second member 7 to the terminal. A connector on the other end of the hose 1 can be be similarly attached to another terminal without the difficulty and problems experienced with known air line connectors.

The present invention thus provides a hose connector which is simple in construction and which overcomes prior art problems.

CLAIMS

1. A hose connector comprising a first member having one end region adapted to be attached to an end region of a hose, a bore extending through said first member and having an enlarged diameter region remote from said one end region of said first member, a second member having a bore extending therethrough, being rotatably located within the enlarged diameter region of the bore in the first member with at least one seal being provided between said first and second members and resilient means engaging in radially aligned grooves in the wall of the bore in the first member and the outer surface of said second member, said bores being coaxially aligned with each other, with the bore in said second member extending through a portion of said second member which has an external threaded region for attachment to complementarily threaded terminal.

2. A hose connector as claimed in claim 1, in which two sealing rings are provided, each sealing ring being located in an annular groove in the periphery of said second member and projecting radially therefrom for engagement with said first member.

3. A hose connector as claimed in claim 2, in which the sealing rings, in the complete connector, are axially located one on each side of the aligned grooves

in which said resilient means engage.

4. A hose connector as claimed in claims 2 or 3, in which one sealing ring engages the wall of the said enlarged region of said bore in the first member to act primarily as an air seal, and the other sealing ring engages said first member in the region of the mouth of the enlarged diameter region of the bore in the first member to act primarily as a dirt seal.

5. A hose connector as claimed in any one of the preceding claims, in which an annular spring clip forms said resilient means, the annular spring clip exerting a radially outwardly directed force and being of sufficient radial extent to engage in both of the aligned grooves in said first and second members.

6. A hose connector as claimed in any one of the preceding claims, in which the mouth of the enlarged diameter region of the hose in the first member has a chamfered edge so that during assembly, by engaging the second member complete with at least one sealing ring and resilient means into said mouth, the resilient means and at least one sealing ring are compressed radially by the chamfer.

7. A hose connector as claimed in claim 6, in which in the assembled connector has a sealing ring which engages the chamfer.

8. A hose connector as claimed in any one of the preceding claims, in which the enlarged diameter region of the bore in the first member is stepped to provide a shoulder against which a complementary shoulder on said second member can engage to facilitate a good sealing connection between said first and second members.

9. A hose connector constructed and arranged substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.
